

Abstract of the Disclosure

Methods for improving layered manufacturing techniques to improve an objects' surface properties and shorten manufacturing time for support structures. One aspect of the invention forms surfaces having reduced or no concavities between
5 layers having improved crack resistance. One method deposits alternate, surface improvement material on each layer near the future location of the main material surface, followed by deposition of the main material, the edges of which conform to the previously deposited and solidified alternate material. In this method, the center of the main material layers can be concave rather than the interlayer regions. Another
10 aspect of the invention provides removable structures to support the deposition of main material. The support structures provide support over main material cavities for depositing the material to form the cavity ceilings, while minimizing the time and material required to build the support structures. Minimized support structures include structures formed as columns supported by the cavity floor and angle braces
15 to supported by the cavity walls. Some supports are supported by the side wall but not the floor, and other by the floor and not the side walls.